

Stauffer Chemical Company

3/17
COPY

bcc:

A. Blackwell
G. W. Coleman
R. Crow
E. A. Hays
C. L. Heath
C. Kent
R. Naley

March 17, 1972

Mr. G. R. Couch
Amax Specialty Metals, Inc.
1 Greenwich Plaza
Greenwich, Conn. 06830

Re: Zirconium Tetrachloride

Dear Bob:

In line with our telephone conversation this afternoon, I am sending you three copies of our schedules covering the cost of the Pollution Abatement Program at Niagara Falls and that portion which applies to Amax. I know that there are points in these schedules which you will want to discuss and which could not possibly be covered in a letter. I thought I would let you have these schedules now and then we can discuss the whole program in detail later.

I am looking forward to seeing you on Friday, March 24th here in New York. Mr. Foreman is planning to meet with Mr. Heath from Niagara Falls on Friday morning and I am glad that it will be possible for you to join us. We are also looking forward to your having lunch with us at that time.

With very best regards.

Yours very truly,

J. P. Madden
Marketing Manager
Chlor-Alkali Products

JPM:als
Encl.

Pollution Abatement - Niagara Falls Metal Chlorides
Stauffer Chemical Company

On December 9, 1971 the New York State Department of Environmental Conservation, Division of Pure Waters, advised Stauffer Chemical Company of a proposed overall pollution abatement program for the Niagara Falls plant.

Non compliance with this program will result in the State issuing an order to close the metal chlorides operation.

In order to meet the required air and water emission standards, Stauffer has estimated that a program costing in total \$1,832,140 will be required.

Stauffer, in its best judgment, will allocate these pollution abatement costs to all of their customers, including Stauffer's own captive requirements.

Attached are examples of possible pollution payback methods using estimated costs, subject to actual experience.

Pollution Costs - Niagara Falls Metal Chlorides

Estimated Capital Costs (equipment plus installation)

<u>Air Pollution Abatement</u>				
<u>Description</u>	<u>Completion Date</u>	<u>Total</u>	<u>Cost Breakdown</u>	
			<u>SiCl₄</u>	<u>ZrCl₄</u>
1) Bag Collector	1/1/72	27,000	13,500	13,500
2) Bag Collector	2/15/72	33,000	16,500	16,500
3) Silicon tetrachloride tank, tank car, and tank truck vents	5/15/72	20,000	20,000	
4) Tank car cleaning scrubber	4/1/72	22,000	16,000	6,000
5) Still scrubber	6/1/72	30,000	30,000	
6) Cyclone solids handling	3/1/72	43,500	21,750	21,750
7) Still droppings	3/1/72	2,000	2,000	
8) Flare stack on reactor flue gases	11/1/72	180,000	90,000	90,000
9) Portable scrubber	4/15/72	3,000	1,500	1,500
10) Boiler house fuel conversion (coal to oil)	1/1/73	80,000	40,000	40,000
Sub Total		440,500	251,250	189,250
<u>Water Pollution Abatement</u>				
11) Interim Ph Control	2/1/72	10,000	5,000	5,000
12) Effluent Treatment	6/1/73	235,500	162,500	73,000
Sub Total		245,500	167,500	78,000
<u>Grand Total Capital Costs</u>		686,000	418,750	266,250

AmaxPollution Capital Costs Estimates* (April 1972 - September 30, 1974)**

April 1972 - June 1972	\$ 540/mo.
July 1972 - December 1972	<u>620/mo.</u>
Total 1972 (9 months)	5,340
January 1973 - June 1973	\$ 2,325/mo.
July 1973 - December 1973	<u>3,400/mo.</u>
Total 1973	34,350
January 1974 - September 1974	\$ <u>3,400/mo.</u>
Total 1973 (9 months)	<u>30,600</u>
Total Capital Costs	<u>\$70,290</u>

*Monthly payments are based on estimated capital costs of equipment. Each piece of equipment is fully depreciated from the date it is put into operation until the end of the present contract. In addition a cost of capital of 8.5% applies to each piece of equipment for the period of its operation. In this method, monthly payments are increased as each piece of equipment is put into operation.

**Based on 20% of $ZrCl_4$ committed capacity reserved for Amax.

Pollution Abatement - Niagara Falls Metal Chlorides

Estimated Operating Costs

<u>Description</u>	<u>Total Cost for 1972</u>	<u>Cost Breakdown</u>	
		<u>SiCl₄</u>	<u>ZrCl₄</u>
1) Maintenance Materials	68,600	41,850	26,750
2) Maintenance Labor	68,600	41,850	26,750
3) Electricity	15,000	9,900	5,100
4) Water	18,000	11,880	6,120
5) Air	4,000	2,640	1,360
6) Nitrogen	15,000	9,900	5,100
7) Caustic	44,800	29,570	15,230
8) Acid	10,000	6,600	3,400
9) NaHS	7,500	4,950	2,550
10) Operating Labor	15,000	9,900	5,100
11) Cartage Fees	<u>89,000</u>	<u>58,740</u>	<u>30,260</u>
	355,500	227,780	127,720
(escalated by 4%) 1973	369,720	236,890	132,830
(escalated by 4%) 1974	384,510	246,370	138,140

AmaxEstimated Pollution Operating Cost (April 1972 - September 30, 1974)

	<u>Total ZrCl₄ Pollution Operating Costs (\$)</u>	<u>Amount Attrib.* to Amax (\$)</u>	<u>Estimated Sales (M lbs.)</u>	<u>Cost/lb. (\$/lb.)</u>
1972 (9 mo.)	95,790	19,160	3.38	.0057
1973	132,830	26,570	4.50	.0059
1974 (9 mo.)	103,610	<u>20,720</u>	<u>3.75</u>	<u>.0055</u>
	Total	66,450	11.63	.0057

*Based on 20% of ZrCl₄ committed capacity reserved for Amax.

Assessment is \$.0057 /lb. of ZrCl₄ purchased.

AmaxPollution Payback Method I*Pollution Costs (April 1972 - September 30, 1974)

Pollution Capital Costs		Operating Costs (estimated on <u>lbs. purchased</u>)	Total Pollution <u>Payments</u>
April 1972 - June 1972	\$ 540/mo.		
July 1972 - December 1972	<u>620/mo.</u>		
Total 1972 (9 months)	5,340	\$19,160	\$ 24,500
January 1973 - June 1973	\$ 2,325/mo.		
July 1973 - December 1973	<u>3,400/mo.</u>		
Total 1973	34,350	\$26,570	\$ 60,920
January 1974 - September 1974	\$ <u>3,400/mo.</u>		
Total 1974 (9 months)	30,600	\$20,720	\$ 51,320
Total April 1972 - September 1974			<u>136,740</u>

*Typical example based on present estimates, subject to actual experience.

AmaxPollution Payback Method II*

Sliding Scale Pollution Costs (Capital plus Operating)

<u>Total lbs. purchased</u> <u>in 30 months</u> (M lbs.)	<u>Average</u> <u>lbs. /mo.</u> (M lbs.)	<u>Est.</u> <u>Capital</u> <u>Costs</u> <u>(\$/lb.)</u>	<u>Est.</u> <u>Operating</u> <u>Costs</u> <u>(\$/lb.)</u>	<u>Est.</u> <u>Total</u> <u>(\$/lb.)</u>
8	.27	.0088	.0057	.0145
10	.33	.0070	.0057	.0127
12	.40	.0059	.0057	.0116
13	.43	.0054	.0057	.0111
14	.47	.0050	.0057	.0107
15	.50	.0047	.0057	.0104

Total capital cost over 30 months = \$70,290**

*Typical example based on present estimates, subject to actual experience.

**See page 3 for calculation of total capital cost.

AmaxPollution Payback Method III*Capital Costs

Lump sum payment for assessed portion of capital equipment net 30 days after start of the applicable pollution control facilities and equipment and receipt of invoice. If this option is chosen an annual management fee of 5% for operation of the pollution control facilities will be applicable, as well as a working capital charge of 12.5% on the estimated outstanding funds.

	<u>Total ZrCl₄ Capital Costs(\$)</u>	<u>Amount Attributed to Amax (\$)</u>	<u>Management Fee (Annual) (\$, 000)</u>	<u>Total Capital Costs</u>
1972				
April	56,750	11,350		
May	7,500	1,500		
June	-	-		
July	-	-		
Aug.	-	-		
Sept.	-	-		
Oct.	-	-		
Nov.	90,000	18,000		
Dec.	-	-		
<u>Total 1972</u>	<u>154,250</u>	<u>30,850</u>	<u>1,190</u>	<u>32,040</u>
1973				
Jan.	40,000	8,000		
Feb. -May	-	-		
June	73,000	14,600		
July-Dec.	-	-		
<u>Total 1973</u>	<u>113,000</u>	<u>22,600</u>	<u>2,810</u>	<u>25,410</u>
1974				
Jan. -Oct.	-	-		
<u>Total 1974</u>	<u>-</u>	<u>-</u>	<u>2,170</u>	<u>2,170</u>
Totals (1972-1974)	<u>267,250</u>	<u>53,450</u>	<u>6,170</u>	<u>59,620</u>

Total Capital Costs 1972-1974 = \$59,620

*Typical example based on present estimates, subject to actual experience.

AmaxMethod III (continued)Operating Costs (same as Method I)

	<u>Total ZrCl₄ Pollution Operating Costs (\$)</u>	<u>Amount Attributed to Amax (\$)</u>	<u>Estimated Sales (M lbs.)</u>	<u>Cost/lb. (\$/lb.)</u>
1972 (9 mo.)	95,790	19,160	3.38	.0057
1973	132,830	26,570	4.50	.0059
1974 (9 mo.)	103,610	<u>20,720</u>	<u>3.75</u>	<u>.0055</u>
		66,450	11.63	.0057

Assessment is \$.0057/lb. of ZrCl₄ purchased.

Based on 20% of ZrCl₄ committed capacity reserved for Amax.

AmaxSummary of Pollution Payback Methods

Method I - Monthly capital equipment costs assessed as each piece of equipment is put into operation. All Equipment is fully depreciated from the date it is put into operation until the end of the present contract. In addition, a cost of capital of 8.5% applies to each piece of equipment for the period of its operation.

Operating costs separate and assessed on a \$/lb. purchased basis.

Method II - Capital and Operating costs are assessed on a per pound basis using a sliding scale based on amount purchased.

Method III - Capital costs are reimbursed Stauffer in lump sum payments as equipment is put into operation. An annual management fee of 5% for operation of the pollution control facilities and a working capital charge of 12.5% on the estimated outstanding funds will be applicable.

Operating costs separate and assessed on a \$/lb. purchased basis.

		<u>Capital</u>	<u>Operating</u>	<u>Total</u>
Method I	1972	5,340	19,160	24,500
	1973	34,350	26,570	60,920
	1974	30,600	20,720	51,320
	Total			136,740
Method II	1972	21,600	19,270	40,870
	1973	28,760	25,650	54,410
	1974	23,960	21,380	45,340
	Total			140,620
Method III	1972	32,040	19,160	51,200
	1973	25,410	26,570	51,980
	1974	2,170	20,720	22,890
	Total			126,070

Note: Method I and II will result in the same total for 1972 through 1974. Differences above result from rounding errors.